What is claimed is:

1. An apparatus comprising:

a first laser, emitting a first beam having a first frequency;

a second laser, emitting a second beam having a second frequency, the difference between the first frequency and the second frequency being in a Terahertz range;

a mixer, located downstream of the first laser and the second laser, the mixer producing a mixed signal; and

a modulator modulating at least one beam between the first beam and the second beam.

2. The apparatus of claim 1, wherein the mixed signal has a frequency spectrum comprising a carrier component and at least two sideband components, the carrier component centered at a Terahertz frequency.

3. The apparatus of claim 2, wherein the carrier component has a frequency displacement from the sideband components depending on the modulation of the at least one beam.

4. The apparatus of claim 1, wherein the modulator is combined with the mixer through use of a three-terminal device.

5. The apparatus of claim 4, wherein the three-terminal device is a high electron mobility pseudomorphic transistor.

6. The apparatus of claim 1, wherein the modulator is located upstream of the mixer.

7. The apparatus of claim 1, wherein the modulator performs frequency modulation of the at least one beam.

8. The apparatus of claim 1, wherein the modulator performs amplitude modulation of the at least one beam.

9. The apparatus of claim 1, wherein at least one frequency between the first frequency, the second frequency and the modulator frequency is a tunable frequency.

10. An apparatus comprising:

a first laser, emitting a first beam having a first frequency;

a second laser, emitting a second beam having a second frequency, the difference between the first frequency and the second frequency being in a Terahertz range;

a frequency modulator, having a modulation frequency, for frequency modulating one beam between the first beam and the second beam; and

a mixer, having as an input the frequency modulated one beam and the other beam and outputting a mixed signal.

11. The apparatus of claim 10, wherein the mixed signal is tunable.

12. The apparatus of claim 11, wherein the mixed signal is tunable by tuning the modulation frequency of the frequency modulator.

13. The apparatus of claim 11, wherein the mixed signal is tunable by tuning the difference between the first frequency and the second frequency.

14. The apparatus of claim 10, wherein:

the mixed signal is adapted to be input to a sample whose spectral properties have to be detected; and

the apparatus further comprises a detector, disposed downstream of the sample, for detecting a signal output from the sample in response to the mixed signal input thereto.

15. The apparatus of claim 10, wherein the mixed signal has a frequency spectrum comprising sidebands, the sidebands comprising information to be transmitted to a remote location.

16. The apparatus of claim 10, wherein the first laser and the second laser are narrowband lasers.

17. The apparatus of claim 10, wherein the first laser and the second laser have a frequency band in a range of about 1 KHz to about 10 MHz.

18. The apparatus of claim 10, wherein the first laser and the second laser are chosen from a group comprising laser diodes, fiber lasers, and diode-pumped solid state lasers.

19. An apparatus comprising:

a first laser, emitting a first beam having a first frequency;

a second laser, emitting a second frequency modulated beam having a carrier frequency and a modulation frequency, the difference between the first frequency and the carrier frequency being in a Terahertz range; and

a mixer, having as an input the first beam and the second frequency modulated beam and outputting a mixed signal.

20. The apparatus of claim 19, wherein the mixed signal is tunable.

21. The apparatus of claim 20, wherein the mixed signal is tunable by tuning the modulation frequency.

22. The spectrometer of claim 20, wherein the mixed signal is tunable by tuning the difference between the first frequency and the second frequency.

23. The apparatus of claim 19, wherein:

the mixed signal is adapted to be input to a sample whose spectral properties have to be detected; and

the apparatus further comprises a detector, disposed downstream of the sample, for detecting a signal output from the sample in response to the mixed signal input thereto.

24. The apparatus of claim 19, wherein the mixed signal has a frequency spectrum comprising sidebands, the sidebands comprising information to be transmitted to a remote location.

25. An apparatus comprising:

a first laser, emitting a first beam having a first frequency;

a second laser, emitting a second beam having a second frequency, the difference between the first frequency and the second frequency being in a Terahertz range;

a modulator, for modulating in amplitude one beam between the first beam and the second beam; and

a mixer, having as an input the amplitude modulated one beam and the other beam and outputting a mixed signal.

26. The apparatus of claim 25, wherein:

the mixed signal is adapted to be input to a sample whose spectral properties have to be detected; and

the apparatus further comprises a detector, disposed downstream of the sample, for detecting a signal output from the sample in response to the mixed signal input thereto.

27. The apparatus of claim 25, wherein the mixed signal has a frequency spectrum comprising sidebands, the sidebands comprising information to be transmitted to a remote location.

28. An apparatus comprising:

a first laser, emitting a first beam having a first frequency;

a second laser, emitting a second amplitude modulated beam having a carrier frequency, the difference between the first frequency and the carrier frequency being in a Terahertz domain; and

a mixer, having as an input the first beam and the second amplitude modulated beam and outputting a mixed signal.

29. The apparatus of claim 28, wherein:

the mixed signal is adapted to be input to a sample whose spectral properties have to be detected; and

the apparatus further comprises a detector, disposed downstream of the sample, for detecting a signal output from the sample in response to the mixed signal input thereto.

30. The apparatus of claim 28, wherein the mixed signal has a frequency spectrum comprising sidebands, the sidebands comprising information to be transmitted to a remote location.

31. An apparatus comprising:

a first laser, emitting a first beam having a first frequency;

a second laser, emitting a second beam having a second frequency, the difference between the first frequency and the second frequency being in a Terahertz range;

a high electron mobility transistor (HEMT) having a first terminal, a second terminal, and a photoconductive region on which the first beam and the second beam impinge; and

a modulator having a modulation frequency, for modulating an intermediate signal having an intermediate frequency inferior to the first frequency and the second frequency to obtain a modulated signal, the modulated signal input to the first terminal of the HEMT,

wherein the second terminal of the HEMT outputs a mixed signal having a frequency spectrum depending on the first frequency, the second frequency, the intermediate frequency, and the modulation frequency.

32. The apparatus of claim 31, further comprising an oscillator emitting the intermediate signal at the intermediate frequency.

33. The apparatus of claim 31, further comprising an objective lens for focusing the first beam and the second beam on the photoconductive region of the HEMT.

34. A method comprising:

providing a first laser beam having a first frequency;

providing a second laser beam having a second frequency, the difference between the first frequency and the second frequency being a Terahertz frequency;

modulating at least one beam between the first beam and the second beam; and

mixing the first beam and the second beam to generate a mixed signal.

35. The method of claim 34, further comprising:

inputting the mixed signal to a sample whose spectral properties have to be detected; and

detecting a signal output from the sample in response to the mixed signal input thereto.

36. The method of claim 35, wherein inputting the mixed signal to a sample comprises tuning the mixed signal to create resonance with the spectral properties of the sample.